



# Organization and Activities of the Doctoral Program in Earth Evolution Sciences (Geological Sciences) for the Academic Year 2016

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## Organization

During the year from April, 2016 to March, 2017, several promotions and appointments were made in the Doctoral Program in Earth Evolution Sciences (Geological Sciences) so that our research and teaching activities were enforced. All faculty and administrative staffs were (staffs with an asterisk \* are belonging to the Doctoral Program in Integrative Environment and Biomass Sciences, but they are listed in our organization herewith, because they study geological sciences and have lectures on geological sciences for undergraduate students):

### *Professor:*

Arakawa, Yoji, D. Sc., petrology, geochemistry and geochronology  
Hayashi, Ken-ichiro, D. Sc., migration of heavy metals, geochemistry of hydrothermal system  
Hisada, Ken-ichiro, D. Sc., stratigraphy, sedimentology  
Sashida, Katsuo, D. Sc., Paleozoic and Mesozoic biostratigraphy  
Tsunogae, Toshiaki, Ph.D. (Sc.), metamorphic petrology and crustal evolution

### *Associate Professors:*

Agematsu, Sachiko, Ph.D. (Sc.), paleontology  
Kamata, Yoshihito, Ph. D. (Sc.), stratigraphy, tectonics  
Shigehiro Fujino, Ph D (Sc.), sedimentology, stratigraphy, paleoseismology  
Ujiie, Kotaro, Ph.D. (Sc.), structural geology  
Yagi, Yuji, Ph.D. (Sc.), seismology, structural geology  
\*Maruoka, Teruyuki, Ph.D. (Sc.), geochemistry

### *Assistant Professor:*

\*Anma, Ryo, Ph.D., structural geology and tectonics  
Ikehata, Kei, Ph.D. (Sc.), petrology, resource geology  
Komuro, Kosei, D. Sc., ore geology and geochemistry  
Kurosawa, Masanori, Ph.D. (Sc.), mineralogy and geochemistry  
Kyono, Atushi, Ph.D. (Sc.), structural physics of minerals

### Cooperative Graduate School System

#### *Professor:*

Kohno, Naoki, D. Sc., mammalian paleontology (National Science Museum)  
Shigeta, Uasunari, D. Sc., ammonite paleontology (National Science Museum)  
Associate professor  
Tsutsumi, Yasuyuki, Ph.D. (Sc.), absolute dating (National Science Museum)

#### *Research and Teaching Assistants:*

Otani, Satoshi, B.A.  
Ozaki, Shiro  
Shimizu, Masahiro

#### *Administrative Staff:*

Isaka, Kyoko  
Yasuda, Yoko

## Doctor and Master's Theses

The following doctor and master's theses were completed during the academic year 2016 under the supervision of the members of the Doctoral Program in Earth Evolution Sciences.

### Doctor of Philosophy (Science or Geosciences)

Masaki, Yamada (2016): Geological Evidence for Tsunamis Generated by Intraplate Earthquakes in Beppu Bay.  
Takahiro, Endo (2016): Fluid-Rock Interaction and Formation of Granulites in the Gondwana Collisional Orogen.

### Master of Science or Geoscience

Namiko, Iinuma (2016): Fluid Inclusion Study of Garnet-Clinopyroxene Rocks from the Palghat-Cauvery Suture Zone, Southern India.  
Airi, Kobayashi (2016): Petrology of Mimodal Magmatism in Continent Collision Zones.  
Kazuyuki, Shiomi (2016): Origin of Pyroclastic Rocks in the Central Anatolia Volcanic Province, Turkey: Constraints from Zircon Geochemistry.  
Ieyoshi, Shimizu (2016): Juvenile Sauropod from Phu

- Peng, Kalasin, Thailand.
- One, Sugano (2016): Symmetry Change of ANA Type Zeolite.
- Sota Takagi (2016): Time-Resolved Observation of Crystal Structure Changes Induced by Laser-shock Compression
- Yusuke, Takamura (2016): Detrital Zircon Geochronology and Regional Correlation of the Highland Complex, Sri Lanka, and the Lutzow-Holm Complex, East Antarctica.
- Kohei, Tominaga (2016): Accretion History of the Jurassic Northern Chichibu Belt: Insight from Basaltic Rock Origin.
- Motoki, Nagatsuka (2016): Phylogeny of Otariid Pinnipeds (Mammalia: Carnivora) and Their Faunal Succession in the Western North Pacific During the Pliocene.
- Kei, Matsukura (2016): Mineralization of Skarn-type Tungsten Deposit at the Date-Nagai Mine, Fukushima Prefecture.
- Saki, Mitani (2016): The Effect of Carbon on Silica under High Temperature Condition
- Rikiya, Yamamoto (2016): Lithostratigraphy and Geochemical Features of the Triassic Siliceous Sediments Distribute in Thailand: Depositional Environment of Radiolarian Cherts Just Before the Paleo-Tethys Closing.
- Meng, Pan (2016): Pressure-Temperature Evolution of Cordierite Gnesis from Ihosy, Southern Madagascar.
- Master of Arts in Education
- Misaki, Ihara (2016): A Study on Mineral Identification Through Panning Method for Volcanic Ash Learning.- A Case of Akagi-Kanuma Tephra-.
- Kentaro, Tada (2016): One Consideration of Present Situation and Future Problem of International Earth Science Olympiad. F
- petrological study of Aso volcano, Kyushu, Japan.
- Arakawa, Y., Matsui, and T. Ikehata, K (2014~): Mineralogical and petrological studies of anorthite megacrysts in arc volcanic rocks.
- Arakawa, Y. and Ikehata, K. (2014~): Petrological and geochemical investigations of volcanic rocks in Izu-volcanic arc, central Japan.
- Fujino, S. (2007~): Stratigraphic records of past earthquakes and tsunami along the Nankai Trough.
- Fujino, S. (2014~): Potential risk of tsunamis generated at submarine active faults in western Japan.
- Hayashi, K. (2013~): Oxygene isotope study of hydrothermal ore deposits.
- Hisada, K. and Poshtkoohi, M. (2012~): Tectonics of Middle East (Geology of Iran).
- Hisada, K. and Charusiri, P. (2012~): Tectonics of Indochina.
- Ikehata, K. (2005~): Petrological and petrochemical studies of volcanic products from active volcano.
- Ikehata, K. (2006~): Development of analytical methods for non-traditional (e.g., Cu, Fe, Zn) stable isotope ratios of materials and its applications to geochemical samples.
- Kamata, Y. (2015~): Stratigraphy and tectonics of the Paleo-Tethys in Thailand and Lao.
- Kamata, Y. (2015~): Stratigraphy and tectonics of Jurassic accretionary complex in Japan.
- Komuro, K. (2013~): Geochemistry and formative environment of bedded manganese deposits in Japan.
- Komuro, K. (2015~): Tellurium and selenium mineralization in epithermal gold deposits.
- Kurosawa, K. (2015~): Single fluid-inclusion analysis using particle-induced X-ray emission (PIXIE) to elucidate chemical composition and behaviors of hydrothermal fluids from granites.
- Kurosawa, K. (2015~): Trace-element analysis of pegmatite and mantle minerals by using laser-ablation ICP-MS.
- Kyono, A. (2015~): Studies on a phase transition mechanism from ferrihydrite to hematite with compression, the effect of water on crystal structure and phase variation of the magnesium carbonate hydrate mineral, the carbon solubility into silica minerals under high-temperature, shock-induced phase transition of iron and aluminum metals, symmetry changes of analcime by formation conditions, and TEM investigation of the interaction between bacteria and mineral surfaces.
- Maruoka, T. (2009-2016): Geochemical study for understanding the environmental perturbations at the mass-extinction events.

## Research Activities

Each researcher had the following research activities during the academic year 2016.

### Research projects

- Agematsu, S. (2014~): Reconstruction of the Triassic conodont apparatuses.
- Agematsu, S. (2015~): Lower and Middle Paleozoic microfossils and paleoenvironments in Thailand and Malaysia.
- Arakawa, Y. and Shinmura, T. (2012~): Geological and

- Sashida, K. (2016~): Paleozoic and Mesozoic paleoenvironmental studies in Thailand and peninsular Malaysia.
- Tsunogae, T. and Santosh, M. (2014~2018): Crustal evolution of the Gondwana suture zones in India and Sri Lanka.
- Tsunogae, T., Dunkley, D.J., and Miyamoto, T. (2014~2019): Pressure-temperature-time evolution of granulites in East Antarctica.
- Yagi, Y. (2012~): Seismic source process of large and great earthquakes derived from a hybrid back-projection and a waveform inversion.

#### Research grants

- Agematsu, S. (2017~2020): Lower and Middle Paleozoic microfossils and paleoenvironments in Thailand and Malaysia. Grant-in-Aid for Scientific Research (B), JPY 7,800,000.
- Fujino, S. (2016~2018): Long-term variations in recurrence intervals of earthquakes and tsunamis and crustal deformations in the Nankai Trough, JPY 1,430,000 for 2016.
- Hisada, K. (2012~2016): Ancient West Asian civilization as the foundation of all modern civilization: A counter to the Clash of Civilizations theory. Grant-In-Aid Scientific Research on Innovative Areas, 2012~2016, JPY 7,150,000.
- Ikehata, K. (2016~2018): Discrimination between essential ejecta and altered ejecta based on copper and iron isotopic measurements. Grant-In-Aid for Young Scientists (B).
- Ikehata, K. (2015~2018): In-situ trace and isotopic ratio analysis for seafloor hydrothermal samples. Next-generation technology for ocean resources exploration for Cross-ministerial Strategic Innovation Promotion Program (SIP).
- Kamata, Y. (2015~): Seismogenic faults of the Jurassic accretionary complex in Japan. Grant-In-Aid for Scientific Research (C), JPY 1553,000
- Kyono, A. (2014~2016): Structural changes of iron oxides with nanoparticulation. Grant-in-Aid for Scientific Research (C) from JSPS (project no. 26400511).
- Maruoka, T. (2012~2016): A multi-isotope approach to understanding paleo-environments in West Asia, Grant-in-Aid for Scientific Research on Innovative Areas (MEXT), JPY 3,000,000
- Tsunogae, T. (2014~2017): Petrology of Archaean continental fragments in Neoproterozoic Gondwana collisional orogeny. Japan Society for the Promotion of Science: Basic Research (B), JPY 6,900,000

- Ujiiie, K. (2016~2020): Science of slow earthquakes. Grant-in-Aid for Scientific Research on Innovative Area (Research in a proposed research area).
- Yagi, Y. (2016~): Development of new hybrid back-projection to understand the generation of high frequency waveform in great earthquakes. Japan Society Promotion of Science: Basic Research (C), JPY 4,680,000.

## Activity Reports for Academic Exchange and Cooperation

#### *Chulalongkorn University, the Kingdom of Thailand*

- (1) Exchange of Researchers:  
None
- (2) Exchange of Graduate Students: Parisa Nimnate (Tokubetsu Kenkyusei; AIEJ Short-term Student Exchange Program, 12 months from December 2015, Hisada, K.)
- (3) Collaboration Research:  
None